

## CLAIMS

What is claimed is:

1. A method for encoding a video sequence comprising the steps of:  
executing a first phase of motion estimation, the first phase determining a set of field motion vectors; and  
using the results of the first phase of motion estimation to execute a scene change detection and a 3:2 pulldown detection.
2. The method of claim 1, wherein:  
the set of field motion vectors is determined between a first frame and a second frame;  
the first frame having a first field and a second field, the second frame having a first field and a second field; and  
the set of field motion vectors comprises a first set of motion vectors between the first field of the first frame and the first field of the second frame and a second set of motion vectors between the second field of the first frame and the second field of the second frame.
3. The method of claim 2, further comprising executing a second phase of motion estimation.
4. The method of claim 3, wherein executing the second phase of motion estimation further comprises determining:  
a third set of motion vectors between the first field of the first frame and the second field of the second frame;  
a fourth set of motion vectors between the second field of the first frame and the first field of the second frame; and  
a fifth set of motion vectors between the first frame and the second frame.
5. The method of claim 1, further comprising:  
executing a 3:2 pulldown detection;  
if the 3:2 pulldown detection detects a repeated field, removing the repeated field.

6. A video encoder comprising:  
a motion detection component having a first phase, the first phase to determine a first and second set of motion vectors;  
a scene change detection component;  
a 3:2 pulldown detection component;  
wherein the motion vectors determined by the first phase are used to execute the scene change detection component and the 3:2 pulldown detection component.
7. The video encoder of claim 6 wherein the motion detection component further comprises a second phase to determine a third, fourth, and fifth set of motion vectors.
8. The video encoder of claim 6, wherein the first motion vector is determined between a first field of a first frame and a first field of a second frame, and the second motion vector is determined between a second field of the first frame and a second field of the second frame.
9. The video encoder of claim 6, wherein the scene change detection component detects a scene change by comparing a ratio of the first and second motion vectors to a threshold.
10. The video encoder of claim 6, wherein the 3:2 pulldown detection component detects a repeated field by comparing a ratio of the first and second motion vectors to a threshold.
11. The video encoder of claim 10 further comprising a 3:2 pulldown undo component to compensate for finding a repeated field.
12. The video encoder of claim 11, wherein the 3:2 pulldown undo component compensates for finding a repeated field by replacing the repeated field with a reference to a field from which the repeated field is repeated.

13. The video encoder of claim 16, wherein the 3:2 pulldown undo component compensates for finding a repeated field by averaging the repeated field and a field from which the repeated field is repeated.

14. The video encoder of claim 6, wherein the encoder is embodied in a processor.

15. A computer readable medium storing executable computer program instructions which, when executed by a processor, cause the processor to perform a method comprising:

executing a first phase of motion estimation, the first phase determining a set of field motion vectors; and

using the results of the first phase of motion estimation to execute a scene change detection and a 3:2 pulldown detection.

16. The computer readable medium of claim 15 further comprising a second phase of motion estimation.

17. The computer medium of claim 15, wherein:

the set of field motion vectors is determined between a first frame and a second frame;

the first frame having a first field and a second field, the second frame having a first field and a second field; and

the set of field motion vectors comprises a first set of motion vectors between the first field of the first frame and the first field of the second frame and a second set of motion vectors between the second field of the first frame and the second field of the second frame.

18. The computer readable medium of claim 16 wherein executing the second phase of motion estimation further comprises determining:

a third set of motion vectors between the first field of the first frame and the second field of the second frame;

a fourth set of motion vectors between the second field of the first frame and the first field of the second frame; and  
a fifth set of motion vectors between the first frame and the second frame.

19. The computer readable medium of claim 16, further comprising:  
executing a 3:2 pull-down detection;  
if the 3:2 pull-down detection detects a repeated field, removing the repeated field.

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